Hangar One – Moffett Field

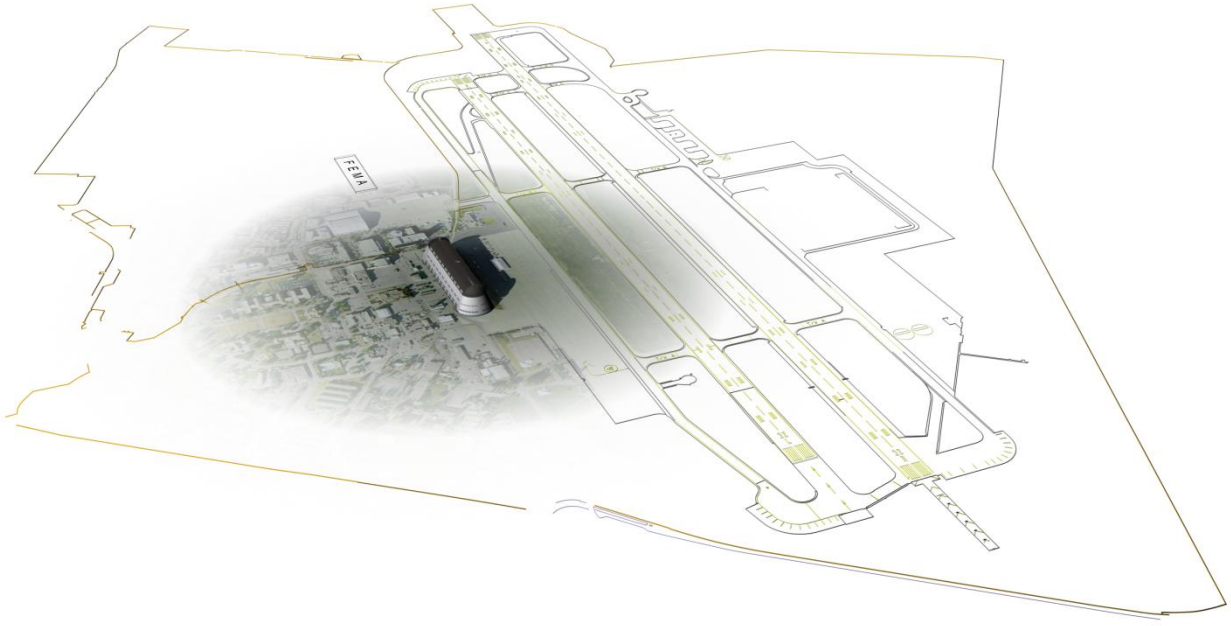
Rehabilitation Project

Installation of Siding, Roof and Windows

Request for Information (RFI) NNA10DF64L

General Information
Posted Date: August 9, 2010

Recovery and Reinvestment Act Action: No
Contracting Office Address: NASA Ames Research Center, P. O. Box 1, Moffett Field, CA 94035-0001



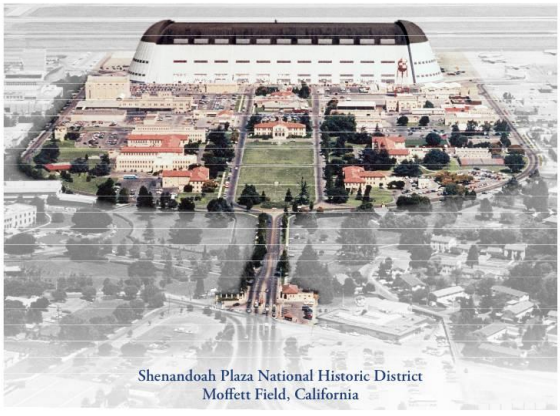
AMES RESEARCH CENTER, MOFFETT FIELD, CALIFORNIA WITH HANGAR ONE

OVERVIEW:

NASA Ames Research Center is planning for the rehabilitation of Hangar One, a historic property located at Moffett Field, California. The hangar is currently undergoing environmental clean up to remove hazardous materials. The remediation of environmental contamination and the removal of hazardous material are being undertaken by the US Navy, as a Navy responsibility. At the conclusion of the Navy's environmental clean up, the hangar will be returned to NASA as a structure free of hazardous materials but without the exterior siding, roof and windows. NASA's desire is to rehabilitate the hangar with new metal siding, restore the historic windows, install a new roof on the upper crown of the hangar and return the hangar to a state of usefulness. To date, funding has not been identified for this rehabilitation effort. This Request for Information (RFI) is not a solicitation to perform the actual work. The RFI is to assist NASA with the knowledge of materials available on the market to design the rehabilitation work.

HISTORY OF HANGAR ONE:

Hangar One is a massive airship hangar built in 1932 as the key component of a new Naval air station known as U.S. Naval Air Station Sunnyvale and locally known as Shenandoah National Historic District. The intent of the air station was to provide a facility that would provide surveillance of the western coast of the United States with the new naval dirigible, the USS Macon. The hangar is massive, almost 1,200 feet in length by 300 feet and 200 feet high, a size required to accommodate the 785-foot long Macon airship. The design of Hangar One is unique not only because of its massive size, but also because of its unique design. After the Macon was lost at sea off the Monterey peninsula in 1935, the hangar served in various capacities for Army Air Corp aviation use and later for the U.S. Navy's aviation programs. In 1994, after the Navy departed Moffett Field, NASA Ames Research Center took over as the responsible government entity for Moffett Field and assumed the responsibilities for reserving the historic integrity of the district.



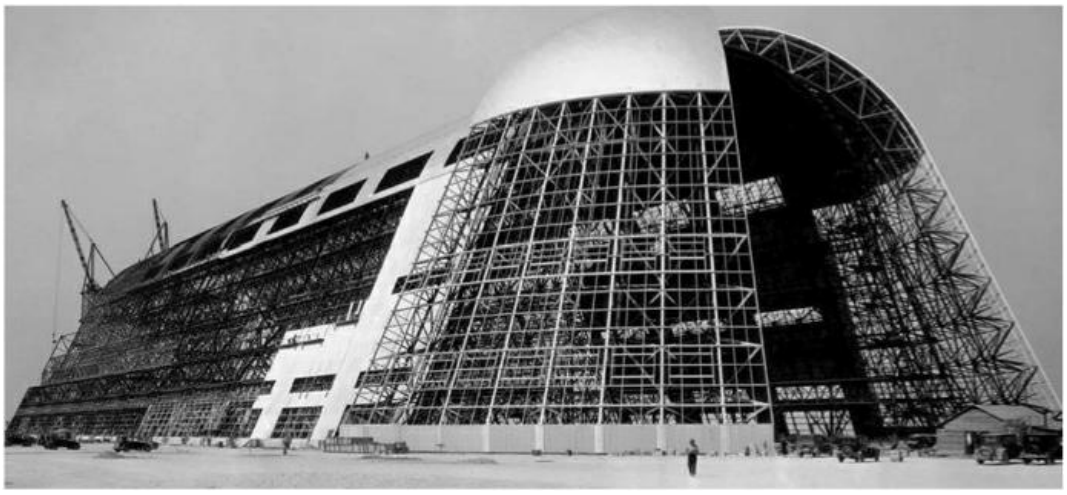
ENVIRONMENTAL CONTAMINATION OF HANGAR ONE:

In 2002, Hangar One was found to be the source of environmental contamination. Elevated levels of PCBs were found in the storm drains around the hangar. Further investigation identified the hangar siding as being the major source of the PCBs. The original siding consists of corrugated steel panels that are of a multilayer construction. Inner layers of the siding have asphalt like material that contains PCBs. Weather and rusting of the panels during the past 78 years have resulted in the release of the PCB material to the environment, a condition that is prohibited by federal regulations. Additional sources of PCBs were also identified in the putty around windows. An encapsulant coating was applied by the Navy to the hangar siding in 2003 in an effort to provide temporary protection from further release of PCBs.

THE CURRENT STATUS OF HANGAR REHABILITATION:

The remediation of the hangar's contamination and the eventual rehabilitation of Hangar One have recently begun. The Navy has agreed to clean the hangar interior and the structural frame of the sources of contamination. The hangar siding will be removed by the Navy and disposed of at an appropriate hazardous waste site. The Navy also plans to remove the historic corrugated glass windows that are a part of the hangar façade.

There is a $1.2 million dollar option from the Navy to decontaminate and clean these windows for future use, however no funding has been identified for this option. The windows are considered to be a critical character defining historic features of the hangar. The Navy plans to return the hangar back to NASA (minus the siding, roof and windows) at the completion of the environmental clean-up process in early Fiscal Year (FY) 2012. The hangar's structural frame will be exposed until NASA manages to install the new siding, windows and the roof.



HANGAR ONE UNDER CONSTRUCTION IN 1931

AMES HISTORIC PRESERVATION OFFICER POINT OF VIEW:

Ames Historic Preservation Officer

The following provides the point of view or official position of the Ames Historic Preservation Officer, Keith Venter, a California registered Architect regarding the future rehabilitation work at Hangar One to maintain the hangar's historic status after the Navy completes their environmental clean-up.

Historic Status

Hangar One is a contributing building located at the U.S. Naval Air Station National Historic District, also called Shenandoah Plaza Historic District, which was listed on the National Register of Historic Places (NRHP) in 1994. The district consists of 40 of the original Spanish colonial revival buildings including Hangar One as the focal point for the entire district. Areas of significance for the historic nomination are military and engineering. Individually Hangar One was designated a U.S. Navy Historic Site by the U.S. Navy in 1966. It was also designated a California Historic Civil Engineering Landmark by the San Francisco section, American Society of Civil Engineers in 1977.

Architectural Style and Character-Defining Features

The appearance of the hangar is representative of the Streamline Moderne style. This style emulated the speed that was the essence of the modern age. The teardrop shape gave the impression of movement with the illusion of speed. The hangar exhibits many character defining features including its Streamline Moderne form, industrial exterior skin, "clam shell" doors, strip windows, and exposed interior framework, as well as the original dirigible tie-downs encased in the concrete floor. Architecturally, Hangar One mimics the form of the dirigibles it once housed, while the rounded shape reflects the Streamline Moderne architectural style of the time. Other character-defining features still existing are the 'explosion-proof' light fixtures manufactured by Westinghouse along with the four rows of window bands (which appear flush with the skin of the building) that are located on both the eastern and western façade.

The Secretary of the Interior's Standards for Rehabilitation (The Standards)

The Secretary of the Interior's Standards for Rehabilitation from the National Park Service states in general that deteriorated historic features shall be "repaired" rather than "replaced". Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall be replaced in kind and match the old in design, color, texture, and other visual qualities.

Replacement of the Metal Siding and Roof

The deterioration and PCB contamination of the existing historic character-defining metal siding at Hangar One is so extensive that repair appears to be impossible. The preferred option per the Standards is the replacement in kind without the hazard. The same approach would apply to the roof.

Hangar One Built-Up Roof

Hangar One Built-Up Roof

Hangar One Upper Rows of Corrugated Windows

Hangar One Metal Siding

Repair of the Corrugated Windows

The existing corrugated windows in the upper two rows of the hangar are historic character defining features and warrant additional work of repairing the original windows as recommended by the Standards. While this involves scraping the putty and cleaning of these existing windows, the replacement of the windows is not an appropriate preservation treatment as per the Standards when replacement in kind is possible.

Color

NASA's preference is to match the existing color of the siding covering the black roof and gray walls. In 1932, the original color of the hangar was all gray. The Navy later changed the roof to the black color in order to create a natural heat gain from the sun to prevent the unusually high volume of condensation within the structure. The black upper roof has been in place for over 50 years.

Historic Integrity Evaluation and Assessment of Effect

The National Register Bulletin entitled *How to Apply the National Register Criteria for Evaluation* provides guidance in regard to eligibility, integrity, period of significance, and resource type.[1]

As a federal undertaking, the contamination remediation being conducted by the Navy and its subsequent rehabilitation by NASA, necessitates compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation at 36 CFR 800. This section requires federal agencies to take into account the effects of their actions on historic properties, such as Hangar One.

Ames Historic Preservation Officer has assessed the potential of the proposed rehabilitation of Hangar One to affect its historic integrity and eligibility for the NRHP. The abovementioned National Register bulletin notes that a historic property derives its significance from its association with an important historic context and because it retains historic integrity of those features necessary to convey its significance. Under Section 106, a project that compromises a historic resource's historic integrity is said to have an adverse effect.

The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance. Within the concept of integrity, the abovementioned National Register bulletin notes that, to retain historic integrity, a property must possess several, and usually most, of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. The following is a definition and analysis of each of the seven aspects of integrity in relation to this proposed project:

Location:

The place where the historic property was constructed or the place where the historic event occurred -

Because Hangar One, a historic district contributor, will be rehabilitated in place with materials selected to match original materials as closely as possible, the integrity of location for that resources will not be lost. The proposed project will not change the location of the hangar nor the remaining other district contributors.

[1] U.S. Department of the Interior, National Park Service, *How to Apply the National Register Criteria for Evaluation*, 1990, Revised 1991, 1995, 1997, Revised for Internet 1995, 2001, 2002, Accessed July 22, 2010.


South View of Hangar One

Design:

The combination of elements that create the form, plan, space, structure, and style of a property -

The massive hangar served as the focus of the U.S. Naval Air Station Sunnyvale. The base was designed to be formal and hierarchical, with administration buildings placed according to their importance along the main east-west axis created by Shenandoah Plaza. Hangar One also serves as the anchor *or terminus* of the main view corridor. When entering the historic district, visitors have a perfectly aligned view dominated by Hangar One.

Hangar One is the only district contributor in the Streamline Moderne, a style popular in the 1930s, which often emphasized rounded forms and horizontal lines. The other district contributors are Spanish Colonial Revival style.

The proposed project will not eliminate the major terminus, or element, of the base plan, and thereby not change the main view corridor or remove the only example Streamline Moderne style *within* the district. The integrity of the air base design will not be affected by the proposed project. The design of Hangar One will be retained through replacement in kind of the roof and sides in accordance with the Secretary's Standards.

Setting:

The physical environment of a historic property -

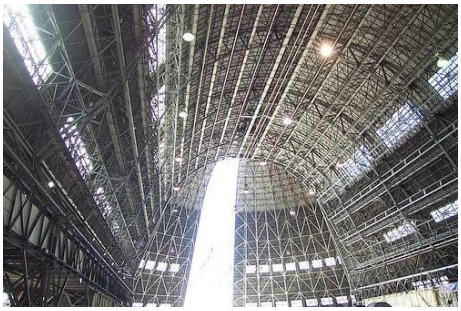
The immense size of Hangar One makes it visible from any position within the historic district, as well as from the adjacent major highway, Route 101. The structure serves as a constant reminder of the original purpose of the base as the home of the USS Macon and

its necessary staff and auxiliary functions. The integrity of the setting would not be affected by the proposed project, which would replace in kind the exterior cladding of one of the most significant buildings of the district.

Hangar One with the Macon in 1932

Materials:
The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property -
Because the hangar's original siding material has been found to be contaminated with PCBs and asbestos, the original hazardous siding cannot be restored for reuse. In addition, the original siding is nearly 80 years old and exhibits rusting in many areas. The siding has appeared to reach the end of its useful life. By the definition found in the Section 106 regulations at 36 CFR 800.5(a)(2), the physical destruction or damage to all or part of the property constitutes an adverse effect. However, the replacement in kind of the historically significant corrugated metal siding with a similar sine-wave profile siding (without the original hazardous materials) and the repair and reinstallation of the original corrugated glass windows serves to minimize and mitigate the adverse effect to Hangar One.

Workmanship:
The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory -
The unique purpose of Hangar One, housing the USS Macon, resulted in the construction of an equally unique building, a huge streamlined structure with steel frame, metal sheathing and innovative “orange peel” or clamshell doors. Hangar One at Moffett Field is one of only three hangars (the other two are located at Naval Air Station Lakehurst, New Jersey and *the Akron Air Dock in* Akron, Ohio) to house the Navy’s four massive dirigibles built in the 1920s and early 1930s. The scope of the rehabilitation project will not affect the integrity of workmanship of the original hangar.



Inside of Hangar One Today

Feeling:
A property's expression of the aesthetic or historic sense of a particular period of time - Hangar One communicates the purpose of the entire district and reminds visitors of the period of time, 1933 to 1935, when the USS Macon, and later, smaller airships, was an integral part of the United State's defense of the Pacific Coast. The integrity of feeling will not be affected by the proposed project.

Association:
The direct link between an important historic event or person and a historic property - The association of the historic district with dirigibles and aircraft defense development would not be affected by the proposed project. Currently, the airfield and an adjacent hangar (which is also part of the historic district) are being used by a modern tourist airship known as "Airship Ventures". The appearance of this airship serves to enhance the historic linkage between the airships and the hangars.

Assessment of Adverse Effect
The removal of the roof and siding of Hangar One constitutes an adverse effect. However, the proposed rehabilitation of Hangar One, including the replacement in kind of the roof and siding, serves to minimize and mitigate these adverse effects. The rehabilitation according to the Secretary's Standards will also allow the building to retain most of the seven aspects of integrity discussed above.

Hangar One serves as a powerful reminder of the original reason for the construction of the base, housing the USS Macon and the lighter-than-air defense program. This rehabilitation project will return the hangar to a state of usefulness.

NASA'S REHABILITATION PLANS FOR HANGAR ONE:
NASA is now investigating sources, methods, and plans for in kind replacement of the siding and roof of Hangar One with new, weather resistant steel siding and re-installing the historic windows. The goal that NASA desires in this RFI is to develop a process that takes the hangar

from a cleaned structural exposed frame to a re-sided, re-roofed, and re-windowed building that will allow Hangar One to be returned to useful service for the next 100 years.

REQUEST FOR INFORMATION (RFI):

Responses to this RFI must be submitted electronically in writing to the Contracting Officer no later than 5:00 PM PDT on September 23, 2010. The responses will be secure and all information entered is strictly for NASA use only. Each responder may respond to any or all items of this RFI.

In addition to whatever information the responder chooses to provide, each RFI response shall include a cover sheet with the following information:

1. RFI Solicitation Number and Title
2. Responding Organization (including address, POC and phone number)
3. A brief synopsis of the RFI response in less than 20 words
4. Item number your response is addressing
5. Potential partnerships (industry, international, US government agencies)
6. Whether your company/organization would be available for a site visit

The information provided in responses to this RFI will not be made public in an effort to protect any proprietary company information. Any proprietary or restricted data submitted within a response must be clearly marked so it can be identified and protected. Responses received from this RFI will be used to help refine the design to rehabilitate Hangar One. The information may be used to determine in-house and contracted acquisition strategies to accomplish the success of this project.

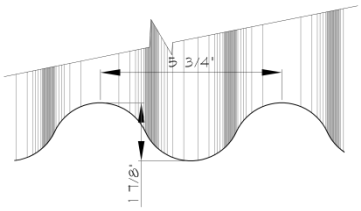
In accordance with FAR 15.201(e), responses to this RFI are not offers and cannot be accepted by the Government to form a binding contract. The Government is under no obligation to issue a solicitation or to award any contract on the basis of this RFI. The Government will not pay for any information solicited. No evaluation letters and/or results will be issued to the respondents. No solicitation exists; therefore, do not request a copy of a solicitation. If a solicitation is released it will be synopsized on the NASA Acquisition Internet Service website at http://procurement.nasa.gov/cgi-bin/EPS/bizopps.cgi?gr=D&pin=21 or the Federal Business Opportunities (FedBizOpps) website at www.fbo.gov . It is the potential offeror's responsibility to monitor these sites for the release of any solicitation or synopsis.

RFI QUESTIONS TO A/E FIRMS, MANUFACTURES AND INSTALLERS:

Due to the unique design and scale of this project, a broad-base team approach is also being considered for an overall process that includes information on design fees, custom products, schedules, method of installation, preliminary materials and construction cost, and qualifications to find the best solutions for the rehabilitation of Hangar One.

The National Aeronautics and Space Administration (NASA) is seeking information through this RFI to improve the understanding of the following:

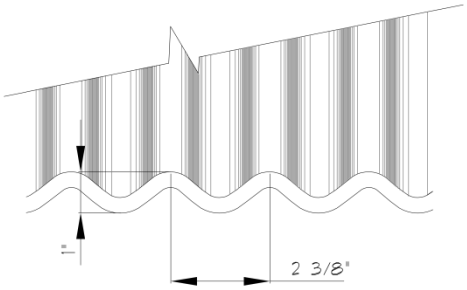
1. Sources and material costs for in kind replacement siding panels and delivery schedule information for these panels that meets the historic preservation criteria described above to match the existing sine wave pattern. Panels proposed shall have extended life durability from weathering and condensation. Panel life is desired to be at least 75 years. Panels shall be either of corrosion resistant steel or be coated with corrosion resistance material to provide the desired life. Existing panel sizes are approximately 30 inches wide by 9 feet long and has a corrugated sine wave pattern. There is approximately 800,000 square feet of outer surface area at the hangar. Of this, approximately 150,000 square feet is the black area above the grey area. The black area includes curved siding panels and the curved roof crown area. The existing crown area of the roof is made up of built-up roofing material.



Existing 20 Gage Metal Siding with the Sine Wave Pattern

2. Methods, approaches and costs for installing in kind replacement siding panels onto hangar frame. Ease of installation is desired. Panel attachment to the hangar's structural frame shall take into consideration resistance to wind, vibration and flutter. The weight of the replacement panels and their potential stress on the historic frame of Hangar One should also be considered. Panel overlap shall match existing. Thermal expansion and contraction shall be factored into the panel installation.

3. Investigate and identify costs and approaches for re-installation of the existing, historic corrugated glass windows into the existing window frames in the two upper bands surrounding the hangar. This treatment is the preferred choice and is in accordance with the Secretary's Standards. Also, investigate and identify sources and costs for the in kind replacement of 20,000 square feet (approximate) of special, ½-inch thick corrugated glass windows with wire mesh located in the existing window frames in the two upper bands surrounding the hangar.



Existing ½ " thick Corrugated Window

4. Investigate and identify costs for the re-installation of the existing, historic flat glass with wire mesh that is located in the two lower bands of windows surrounding the hangar. This treatment is the preferred choice and is in accordance with the Secretary's Standards. Also, identify sources and costs for the in kind replacement of approximately 30,000 square feet of these windows.

5. Development of materials sources and costs to replace in kind the upper built-up roof of the hangar (top of the crown). The new roof design shall be designed to provide a life of 40 years. Provide methods, approaches and costs for installing the new roof on the crown area of the hangar top.

6. Identify schedule and work plan for installation of in kind replacement siding panels, installation upper roof crown area and the reinstallation of historic windows.

7. Suggest a quality control plan to insure that the Secretary of the Interior's Standards are followed during all process so that potential private entrepreneurs can certify the end result for favorable tax credit treatment.

8. Provide the potential pros and cons to consider a design-build approach for this rehabilitation project with a supply manufacture and installation partnership.

BUY AMERICAN ACT: Materials used to rehabilitate Hangar One will be subject to FAR Clause 52.225-11 /Buy American Act—Construction Materials under Trade Agreements.

SITE VISIT:
Hangar One is not accessible during the Navy's environmental clean up activities; however, the exterior of the hangar can be viewed during normal business hours just outside the Navy's construction fence. Visitors can show their driver's license at the Moffett Field main gate to drive through and also view the hangar up close. Photography of the hangar is allowed.